OLGU SUNUMU CASE REPORT

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COVID-19 Complicated with Peripheral Facial Paralysis

Periferik Fasiyal Paralizi ile Komplike Olmuş COVID-19

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ABSTRACT Coronavirus disease-2019 (COVID-19) is a highly contagious disease that first began in Wuhan province of China and rapidly spread all over the world in a short time, affecting millions of people. At the beginning, COVID-19 has been reported as a severe respiratory tract disease. During this period, typical signs and symptoms were those expected from a respiratory virus such as fever, cough and dyspnea, as a result of the rapid spread of the virus, affecting more people and increasing number of studies in the literature, it has been noticed that the symptoms can manifest in many ways. In addition to malaise, fatigue, diffuse muscle-joint pain, neurological symptoms such as dizziness, loss of taste and smell were also reported. Commonly reported neurological symptoms such as loss of taste and smell in COVID-19, suggest that cranial nerves may also be affected. In this context, COVID-19 can cause various neurological symptoms including peripheral facial paralysis. In this report, we aimed to present a young male patient with peripheral facial paralysis who was diagnosed with COVID-19, and to make a contribution to neurological symptoms caused by COVID-19.

Keywords: COVID-19; facial paralysis; pandemic

ÖZET Koronavirüs hastalığı-2019 [coronavirus disease 2019 (COVID-19)], ilk olarak Çin'in Wuhan kentinden başlayan ve kısa sürede tüm dünyaya yayılarak milyonlarca kişiyi etkileyen oldukça bulaşıcı bir hastalıktır. Başlangıçta COVID-19, şiddetli solunum yolu hastalığı olarak rapor ediliyordu. Bu dönemde tipik belirti ve bulgular ateş, öksürük ve nefes darlığı gibi bir solunum virüsünden beklenebilecek bulgular iken; virüsün hızlı bir şekilde yayılarak daha fazla kişiyi etkilemesi ve zamanla yapılan çalışmaların sayısının artması sonucunda bulguların birçok şekilde ortaya çıkabileceği fark edildi. Hâlsizlik, kırgınlık, yaygın kas-eklem ağrıları yanında baş dönmesi, tat ve koku alma problemleri gibi nörolojik semptomlar da bildirilmiştir. COVID-19'da tat ve koku almada kayıp gibi nörolojik semptomların yaygın olarak bildirilmesi, kranyal sinirlerin de etkileniyor olabileceğini düşündürmektedir. Bu bağlamda COVID-19, periferik yüz felci dâhil olmak üzere çeşitli nörolojik semptomlara neden olabilir. Bu olguda, COVID-19 tanısı konmuş periferik fasiyal paralizili genç bir erkek hastayı sunarak, COVID-19'un sebep olduğu nörolojik belirtilere katkıda bulunmayı amaçladık.

Anahtar Kelimeler: COVID-19; fasiyal paraliz; pandemi

Coronavirus disease-2019 (COVID-19) is an infectious disease that manifests with numerous different signs and symptoms and a high risk of person-to-person transmission and is caused by a newly discovered RNA virus. Therefore COVID-19 disease has spread to wide areas and become a pandemic.[1] COVID-19 generally causes respiratory symptoms. However, the clinical picture of the infection varies widely. In recent studies, some authors have shown that COVID-19 also causes neurological symptoms such as headache, dizziness, encephalitis, muscular damage, ischemia and stroke.[2,3] On the other hand, very few cases of COVID-19 occurring with peripheral facial paralysis have been reported in the literature.[4,5]

The initial symptoms of peripheral facial paralysis can present as pain in the mastoid region, it can also cause facial numbness, tingling and facial hemiparesis. Although there is no direct evidence, the most common cause of facial paralysis is viral infec-

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tions.[6] In this study, we present a case of peripheral facial paralysis, which is a rarely reported neurological complication of COVID-19.

CASE REPORT

A 30-year-old male patient presented to the emergency department with the complaints of fever, joint pain, cough and diarrhea. As a result of physical examination, a throat swab was taken and reverse transcription-polymerase chain reaction (RT-PCR) test was performed with the presumed diagnosis of COVID-19. The patient with positive PCR test was diagnosed with COVID-19, hydroxychloroquine and favipiravir were initiated and the patient was taken under follow-up. Our patient developed right hemifacial asymmetry in addition to the existing symptoms. The patient was examined by the departments of otorhinolaryngology and infectious diseases and diagnosed with peripheral facial paralysis developed due to COVID-19. Nonsteroidal anti-inflammatory drugs, a vitamin B complex and synthetic teardrop were started. PCR test became negative 10 days after the first admission, the patient was complaint free except for facial paralysis, drugs were stopped and he was referred to the physical medicine and rehabilitation outpatient clinic.

The patient presented to our outpatient clinic with the complaints of facial asymmetry, right hemifacial weakness and inability to fully close the right eye. Vital findings at the first presentation include fever: 36.3 ºC, blood pressure: 125/75 mmHg, heart rate: 75/min, respiratory rate: 18/min and oxygen saturation: 99%. In the laboratory analysis, C-reactive protein was found as 3.5 mg/dL (0-0.5) and sedimentation as 9 mm/hour. Neutrophil, lymphocyte, platelet counts, liver enzymes and the other blood parameters were normal. In the tests performed for differential diagnosis, no viral antigens belonging to herpes zoster or any other viral infection were detected. No abnormal image was observed in the cranial magnetic resonance imaging and thoracic computed tomography scans. The patient had no history of hypertension, diabetes mellitus, heart disease or immunosuppressive disease. He was not smoking and drinking alcohol. There was no recent history of respiratory infections, tick bites, exposure to cold, or any trauma. In the physical examination, there were mimic muscle weakness, right facial asymmetry and he could not fully close his right eye. His nasolabial groove was deviated to the left side and he had hypoesthesia on the right facial side. Other system examinations were completely normal. Our patient was taken to the standard physiotherapy and rehabilitation program that involved electrical stimulation and facial paralysis exercises.

Verbal informed consent was obtained from the patient for the publication of this case report.

DISCUSSION

Peripheral facial paralysis is the most common cranial nerve paralysis and is usually associated with viral infections. In peripheral facial paralysis, generally the first symptom is pain in the mastoid region, loss of sensation and paralysis in the face.[6] The etiological and pathological mechanisms are still controversial. Predisposing factors of facial paralysis include cold, fatigue, decreased body resistance and immunodeficiency. Peripheral facial paralysis usually occurs 1-2 weeks after virus infections.[6] Studies have shown that peripheral facial paralysis is caused by some seasonal viruses, while in a study herpes simplex virus-1 genome was found in endoneurial fluids of facial nerves in patients with facial paralysis. These are believed to be the pathogenic mechanisms of facial paralysis.[7-9]

COVID-19 mainly causes respiratory system disorders, although it also leads to gastrointestinal, cardiological, neurological and other symptoms in some patients. Nervous system symptoms primarily include headache, dizziness, ageusia and anosmia.[2] In addition, Chen et al. reported a case of asymptomatic COVID-19 pneumonia complicated with acute cerebral infarction.[3] Then, researchers from Beijing Ditan Hospital reported the first COVID-19 pneumonia complicated by encephalitis and found coronavirus in cerebrospinal fluid of the patient with gene sequencing.[10] These case reports support that COVID-19 may cause neurological symptoms that can be present as the first symptom especially in asymptomatic patients or those with mild infection.

In this report, we described a case of peripheral facial paralysis that occurred unexpectedly during the COVID-19 infection. We know that facial paralysis occurs due to viral infections. Considering the infective causes, the absence of skin and ear involvement and dermatomal pain did not suggest varicella zoster virus and herpes virus infections. The low prevalence of Lyme disease, the absence of a tick bite skin rash were considered unlikely. In the tests, there were no viral antigens belonging to herpes zoster or another viral infection. Neoplasmas and cerebrovascular diseases could be considered in the presence of other neurological deficits, but our patient had no neurological deficits except for signs of right peripheral facial paralysis. Therefore, alternative diagnoses were less likely and we thought that our patient developed COVID-19 related facial paralysis, because we were in the middle of the pandemic process, and our patient developed symptoms such as fever, cough and joint pain.

As we mentioned before, COVID-19 usually causes respiratory symptoms, but it has been reported to cause neurological symptoms. In a retrospective study, neurological symptoms were reported in 36.5% of the patients, while in another study, peripheral nerve involvement was shown in 8.9% of COVID-19 patients.[11,12] Severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) virus is very similar to other coronaviruses in structure and infectivity. Since neuroinvasive spread shows a highly diffuse and silent course in coronaviruses, SARS-CoV-2 has the same feature and directly causes damage to the nervous system.[13] It shows this effect probably due to its high affinity to angiotensin-converting enzyme 2 (ACE2) receptors in the nervous system. This is thought to be the most important pathogenesis with its effect on the nervous system.[13-16] ACE receptors are mostly found in the nasal mucosa where viral replication is most common, and in the epithelium and goblet cells of the nasal mucosa. It has been reported that ACE2 can bind to coronavirus and trigger functional changes in angiotensin II Type 2 receptors, and this causes an imbalance in stable cytokines, axis shift and cytokine storms. SARS-CoV-2 directly affects the central nervous system by influencing the olfactory nerve.[15,16] These mechanisms support the opinion that SARS-CoV-2 directly or indirectly leads to some neurological symptoms. Facial nerve damage can be thought to be related to the immune response caused by COVID-19.

Studies have shown that COVID-19 may cause various neurological symptoms.[3,10] Recent studies have reported Guillain-Barre syndrome caused by demyelinating neuropathy that develops secondary to COVID-19.[17,18] Apart from these studies, there are also COVID-19 studies in which peripheral facial paralysis is seen, but the number of these studies is not very high. In a case report by Figueiredo et al., the first and only symptom was peripheral facial paralysis in a pregnant woman diagnosed with COVID-19.[4] In another case report, Wan et al. found facial paralysis in a COVID-19 patient with pneumonic symptoms.[5]

Similar to above mentioned case reports, in our report the association between the COVID-19 infection and facial paralysis was demonstrated. However, more epidemiological knowledge and cases are needed to support this causal association. We believe that better understanding neurologic symptoms and findings of COVID-19 will contribute to better recognition of the virus. Therefore, further studies are warranted to reveal significant and natural history of neurological symptoms in the COVID-19 infection in order to determine the best treatment methods.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

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